Indications for Inflow Reduction of AV Access in the Absence of Steal

Haimanot (Monnie) Wasse, MD, MPH
Director, Interventional Nephrology
Division of Nephrology/Hypertension
Associate Professor of Medicine
Northwestern University
Feinberg School of Medicine

Disclosures

• Consultant: Humacyte, Proteon, Cryolife

• Advisory Board
  – American Society of Nephrology– Chair Interventional Nephrology Work Group
  – American Society of Diagnostic and Interventional Nephrology– Sec/Treasurer
  – Vascular Access Society of the Americas
  – Co-Chair Kidney Health Initiatives Vascular Access Outcomes

The ideal AV access

Just enough flow to avoid thrombosis while providing efficient, reliable dialysis

AV access blood flow: How much is too much?

• Require 500-800 ml/min for dialysis

• High flow access not well-defined
  – ≥2 L/min

• No absolute treatment criteria
  – Decision to initiate invasive management is unclear


When to consider AV access inflow reduction

1. Recurrent outflow vein stenosis
2. Aneurysm enlargement
3. Salvage of AV access in refractory symptomatic central venous stenosis/occlusion
4. High-output heart failure

Inflow reduction: recurrent cephalic arch stenosis

• Cephalic arch prone to re-stenosis
  – Mismatch between volume flow, outflow diameter

• AVF flow rate correlates with cephalic arch stenosis

• Flow reduction in BC-AVF’s can reduce number of cephalic arch interventions


11/21/2015
Inflow reduction: aneurysm enlargement

- First, treat outflow stenosis
  - Reduce intra-access pressure
- Precision banding further reduces AVF pressure, attenuates aneurysm expansion
- Concurrent surgical aneurysm revision if lack of suitable cannulation segment

Inflow reduction: Symptomatic central venous occlusion

Inflow reduction for AV access salvage in symptomatic central venous stenosis/occlusion

- 22 patients with failed PTA + stent for symptomatic central venous occlusion
  - Mean f/u 8 months
- Precision banding to limit AV access flow, preserve access function
  - Mean Qa 1640 mL/min down to 870 mL/min
  - Swelling resolved immediately in 91% patients
  - 20 AVF's functional at f/u

Jennings WC et al, J Vasc Access, 13 (2), 2012

Inflow reduction: High-output cardiac failure

- Observed with Qa ≥ 2.0 L/min, Qa/CO ratio of 30-35%
  - Optimize dry weight, anemia, bp, thyroid
- Consider inflow reduction with increasing LV dimensions, LVMI
- In severe (NYHA class II and IV) failure, consider PD as first choice

1 Pandey S, ASAIO J, 1999

Inflow reduction: Management options

**Endovascular Approach**
- Precision banding

**Surgical Approaches**
- Interposition tapered AVG
- Distalization of inflow

Inflow reduction: Treatment goals

- To avoid thrombosis, Qa ~800 mL/min
  - AVF ≥ 5-600 mL/min
  - AVG ≥ 800 mL/min
  - Increased risk of access thrombosis in absence of venous outflow collaterals
- Ensure patient has a sufficient cannulation segment of good quality

Jennings WC et al, J Vasc Access, 13 (2), 2012
Thank you for your attention